

A note on arbitrary null-subjects*

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Abstract. Arbitrary null-subject constructions are a common property of null-subject languages. Their semantic and syntactic properties have been studied in the *Principles and Parameters* framework and have been attributed to the assignment of an arbitrary index at the Logical Form as a consequence of their licensing by the interaction of theta and case theory at the level of Deep Structure. In this paper we review the semantic and syntactic properties of arbitrary null-subjects in Greek and we try to analyse these properties in terms of the more general licensing principles of null-subjects and indefiniteness.

1. Introduction

A common property of null-subject languages is that, in certain structures, null-subjects may not have definite but rather arbitrary reference. The semantic and syntactic properties of these structures in Romance languages have been studied in the *Government & Binding* framework (Suñer 1983, Otero 1986, Jaeggli 1986, Belletti & Rizzi 1988, Cinque 1988).¹ These studies have attributed the licensing of arbitrary null-subjects to the interaction of the *Projection Principle* and the mechanism of *government* at the *Deep Structure* level, in relation to the assignment of an arbitrary index at the *Logical Form*. However, such analyses are not compatible with the general principles of the *Minimalist Program* (Chomsky 1995), because both the distinction between Deep Structure and Surface Structure and the notion of government have been abandoned. In this paper we briefly present the basic semantic and syntactic properties of arbitrary null-subject constructions with examples from Greek² and then we propose an analysis of the licensing of such constructions in terms of the general licensing conditions of weak elements (Cardinaletti & Starke 1999) and

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¹ See also Dobrovie-Sorin (1994) and Shlonsky (1998) for a more recent approach.

² For a pretheoretical presentation of arbitrary null-subject constructions in Greek see Holton, Mackridge & Philippaki-Warbuton (1997).

indefiniteness (Diesing 1992) in the most recent framework of the Derivation by Phase (Chomsky 2000, 2001)

2. *Properties of arbitrary null-subjects*

As mentioned above, arbitrary null-subject structures are found in all null-subject languages. According to Suñer (1983) these structures involve a *pro* with an arbitrary index, i.e. a *pro*_{arb}. Thus, arbitrariness is not only a property of PRO in non-control environments, but it is a general property of null pronouns. Arbitrariness is in fact the lack of definite reference. As such it is considered to be the default reference, and therefore *pro*_{arb} can refer only to human beings.

The basic characteristic of *pro*_{arb} is that it may have two readings: a) a pure impersonal reading (1), and b) a generic reading (2).

- (1) a. xtipun tin porta
knock-3rd,PL the door-ACC
‘Someone is knocking on the door’
b. \exists_x [x is a human \wedge knocks on the door]
- (2) a. sta kalavrita ftjaxnun kalo tiri
in-the Kalavrita make-3rd,PL good cheese-ACC
‘They make good cheese in Kalavrita’
b. in Kalavrita_x [x are humans] x make good cheese

In other words, the impersonal reading involves a quasi-existential quantification, i.e. there is at least one single individual that satisfies the description. On the other hand, the generic reading involves a generic / quasi-universal quantification, i.e. the description attributes a generic characteristic to the indeterminate null-subject. According to Cinque (1988: 547) these two readings “can be seen as two contextual variants of the same *arb* entity”. In what follows we examine the properties of these two interpretations.

First of all, the impersonal reading is compatible with a single individual satisfying the description (3), whereas the generic reading cannot accept this option (4):

- (3) xtipun tin porta. tha ine o janis
knock-3rd,PL the door-ACC FUT is the John-NOM
‘Someone is knocking on the door. It must be John’

- (4) #* sta kalavrita ftjaxnun kalo tiri.
 in-the Kalavrita make-3rd,PL good cheese-ACC
 o kir joryos to ftjaxni
 the Mr George it-makes
 ‘They make good cheese in Kalavrita. Mr George makes it’

Another property of the two readings is that each reading is associated with a different time reference. Thus, arbitrary null-subjects acquire the relevant interpretation as a function of the different time reference of the tense / aspect of the sentence: the generic reading is associated with an indefinite / generic time reference, whereas the impersonal with a specific one. The examples in (5) have specific time reference either in the present or the past and thus lead to an impersonal reading, whereas the examples in (6) have a generic time reference regardless of the point of time they are placed.

- (5) a. xtipun tin porta
 knock-3rd,PL the door-ACC
 ‘Someone is knocking on the door’
 b. kataskevasan ena uranoksisti sti nea iorki
 built-3rd,PL one skyscraper-ACC in-the New York
 ‘They built a skyscraper in New York.’
- (6) a. sta kalavrita ftjaxnun kalo tiri
 in-the Kalavrita make-3rd,PL good cheese-ACC
 ‘They make good cheese in Kalavrita’
 b. stin arxea elaða kataskevazan meyaloprepis naus
 in-the ancient Greek built-3rd,PL impressive temples
 ‘They used to build impressive temples in Ancient Greece’

More specifically, it can be argued that each reading depends on the interpretation of the verbal aspect. Thus, perfective aspect leads to a specific time reference that facilitates the impersonal reading (5b), whereas the imperfective aspect facilitates the generic time reference and the generic reading of the null-subject (6b). However, the situation is far more complicated, since aspect interacts with tense in the interpretation of the time reference of the sentence. Thus, example (7) may have two readings depending on whether the interpretation is focused on the indefiniteness of the imperfective aspect (8a) or on the specificity of the past time reference (8b):

- (7) pulusan palia vivlia stin plaka
 were selling-3rd,PL old books in-the plaka
- (8) a. pulusan palia vivlia stin plaka
 were selling-3rd,PL old books in-the Plaka
 (ala tora ðen pulane)
 but now NEG sell-3rd,PL
 ‘They used to sell old books in Plaka (but
 not any more)’
- b. pulusan palia vivlia stin plaka (xθes)
 were selling-3rd,PL old books in-the Plaka (yesterday)
 ‘Some people were selling old books in Plaka
 (yesterday)’

The examples above show that the interpretation of the time reference of the utterance also depends on the appropriate context. It should be noted however, that a time modifier facilitates the impersonal reading since it makes the time reference more specific. Thus, example (9b) does not tolerate the generic reading, regardless of the imperfective aspect of the verb form.

- (9) a. xtes stin plaka mu pulisan palia vivlia
 yesterday in-the Plaka me sold-3rd,PL old books
 ‘They sold me old books in Plaka yesterday’
- b. xtes stin plaka pulusan palia vivlia
 yesterday in-the Plaka were selling-3rd,PL old books
 ‘Some people were selling old books in Plaka
 yesterday’

Cardinaletti & Starke (1999) have also noted that the generic reading is most frequently associated with a range restrictor i.e. a phrase that determines the reference of the null-subject by defining a set of people to which this null-subject is referring (see the examples in (9)). It may be argued that the content of this phrase defines the generic operator with which the null-subject is coindexed at the Logical Form. Nevertheless, the existence of such a phrase does not necessarily imply its association with the null-subject. Thus, in example (10a) the PP [*stin arxea elaða*] ‘in Ancient Greece’ is associated with the null-subject and defines the place and the people that satisfy the description of the sentence as a generic characteristic.

- (10) a. *stin arxea elađa kataskevazan*
 in-the ancient Greece were building-3rd,PL
tus naus apo marmaro
 the temples from marble
 ‘In Ancient Greece temples were built with marble’
- b. *xtes stin omonia mirazan luluđia*
 yesterday in-the Omonia were giving-3rd,PL flowers
 ‘They were giving flowers in Omonia square yesterday’

On the other hand, in example (10b) the PP [*stin omonia*] simply determines the place in which the event described in the sentence took place, without defining the reference of the null-subject. In this case, the null-subject is not coindexed with the PP at the LF, and it may acquire an impersonal reading.

The properties described above are mainly semantic in nature and define the two different readings of the arbitrary null-subject. In addition, there is a syntactic asymmetry between the two readings. Whereas the generic reading of the null-subject is associated with all kind of predicates, ergative and passive predicates do not tolerate the impersonal reading (Cinque 1988):

- (11) a. transitive
stin kipro exun pola lefta
 in-the Cyprus have-3rd,PL many money
 ‘People are rich in Cyprus’
- b. unergative – passive
stin eteria afti đulevun poli ala
 in-the company this work-3rd,PL much but
amivonde kala
 get paid-3rd,PL well
 ‘In this company, people work a lot, but are well paid’
- c. ergative
sti larisa to kalokeri vrazun apo ti zesti
 in-the Larissa the summer boil-3rd,PL from the heat
 ‘In Larissa, people almost get boiled by the heat during the summer’
- (12) a. transitive
ti trexi? silamvanun điađilotes
 what runs? arrest-3rd,PL demonstrators
 ‘What’s going on? Demonstrators are getting arrested’

- b. unergative
 stin platia xorevan mexri ta ksimeromata
 in-the square dance-3rd,PL till the dawn
 ‘There were people dancing in the square till dawn’
- c. passive³
 *sinelifθisan sti ðiaðilosi
 were arrested-3rd,PL in-the demonstration
 ‘People were arrested during the demonstration’
- d. ergative
 *evrasan apo ti zesti
 boiled-3rd,PL from the heat
 ‘People get boiled by the heat’

It is obvious that this syntactic asymmetry is due to the syntactic status of the null-subject involved in the structure. Ergative and passive constructions involve a derived subject, i.e. their subject is not the external argument of the predicate but the internal, which has been syntactically promoted. This means that for some reason the impersonal reading cannot be associated with the internal argument, but only with the external, and it is therefore syntactically constrained. The syntactic character of this asymmetry indicates that the two readings must be licensed in the syntactic derivation. Consequently, this difference has been considered pivotal in identifying the licensing mechanisms of arbitrariness (Otero 1986, Jaeggli 1986, Cinque 1988).

The semantic and syntactic properties associated with these two readings, are summarized in the table below:

impersonal reading	generic reading
existential quantification	universal / generic quantification
specific time reference	generic time reference
compatible with a single individual satisfying the description	incompatible with a single individual satisfying the description
no association with a range restrictor	requirement for a range restrictor
subject realizes external argument only	all arguments available

³ Examples (12c-d) are acceptable only with a definite/specific reading of the null-subject.

3. *The licensing of pro_{arb}*

3.1 *The Government & Binding approaches*

The early analyses of the arbitrary null-subject constructions did not pay much attention on the generic reading, and rather focused on the licensing of pro_{arb} with the impersonal reading. Thus, Otero (1986) proposed that arbitrariness is the result of the absorption of certain features from INFL by pro . He suggested that 3rd plural person subject-agreement is inherently arbitrary (impersonal). A pro generated in the [Spec, INFLP] position at the level of the Deep Structure (the GB analysis of null-subjects) absorbs these features. The absorption of these features allows for the pro to acquire the arbitrary (impersonal) interpretation by default.

Jaeggli (1986) notes that derived null-subjects do not tolerate the arbitrary-impersonal reading and proposes an analysis of the licensing of arbitrary null-subjects that attempts to explain this property. According to his analysis, the feature *arb* is assigned at LF to a dependent element that acquires no index in the derivation. He suggests that the assignment of an index is a function of theta-theory and government. Thus, each argument is assigned an index by means of government at the level of Deep Structure and saturates the theta-grid of the verb. The difference between internal and external arguments is that the first acquire their theta-role by the verb whereas the latter by the VP. As a consequence, internal arguments are always assigned an index at the Deep Structure, since they are governed by the V and thus, cannot be assigned the *arb* feature. External arguments, on the other hand, are not governed by the V and are not assigned an index. Thus, they can be assigned the feature *arb*.

As mentioned above, Cinque (1988) was the first linguist to systematically define the two different readings of arbitrariness, namely the impersonal and the generic, and their properties. He also noticed that it is the impersonal reading that is constrained by the thematic requirements of the verb regardless of the arbitrary construction. He attributed this property to the nature of the existential quantification involved in this reading. He suggested that existential quantification is relevant to the Deep Structure only. A pro realizing an external argument is generated in the [Spec, INFLP] position at Deep Structure and therefore absorbs the relevant features from INFL at this level and thus acquires the arbitrary interpretation with the impersonal reading. On the contrary, a pro that realizes an internal argument is generated inside the VP at the Deep Structure and thus cannot absorb the relevant features from INFL at this level. Generic quantification on the other hand is assumed to be relevant to

the Surface Structure level. A null-subject realizing either an external or an internal argument occupies the [Spec, INFLP] position at the Surface Structure level, so it can absorb the relevant features and can therefore acquire the arbitrary reading with the generic interpretation. Thus, the generic reading cannot be constrained by the thematic status of the *pro*_{arb}.

Such analyses build on the GB theoretical assumptions about the distinction between internal and external argument and their different syntactic derivation. However, after the subject-in-VP hypothesis (Koopman & Sportiche 1991) such a distinction cannot be maintained. Recent approaches to theta-role assignment (Hale & Keyser 1993) suggest that both the internal and external arguments are assigned their theta-roles within the VP. Consequently, subjects realizing internal and external arguments are not different as far as their derivation is concerned (they are both generated inside the VP and then move to the [Spec, INFLP]) and thus the asymmetry in index assignment, predicted by Jaeggli's analysis, cannot be maintained. Moreover, the recent advances of syntactic theory have abandoned the levels of Deep Structure and Surface Structure and the mechanism of government. Thus, we cannot appeal to the position of *pro*_{arb} at the level of Deep Structure in order to explain the availability of the arbitrary interpretation with the relevant reading.

3.2 *The licensing of pro and arbitrariness*

When we consider the licensing of *pro*_{arb}, we deal with two general issues. First, *pro*_{arb} is a null-element and as such it requires morphosyntactic licensing. Second, its interpretation is similar to that of indefinites; it is, therefore, expected that arbitrariness should be licensed in the same way as indefiniteness.

*Pro*_{arb} is a null-pronominal. Null-pronominals are considered weak elements. According to Cardinaletti & Starke (1999) weak pronouns lack the upper structural layer, which results in the lack of independent case feature and reference. A *pro* therefore, should meet two requirements: a) it should establish a relation with INFL in order for its case feature to be licensed, and b) it should acquire a reference. In other words, when *pro* establishes its relation with INFL and licenses its case feature, it also licenses an index. However, this index does not have independent reference. This may be established by means of an antecedent in the discourse (Fiengo & May 1994) and then *pro* acquires a specific / definite reference as a pronoun. If *pro* fails to acquire such an antecedent, it acquires the arbitrary interpretation at LF by default as a result of its licensed case feature and index, if and only if it bears the appropriate

feature specification. In addition, the existence of a range restrictor in the sentence may provide *pro* with a range reference resulting in a generic interpretation.

In conclusion, the licensing of arbitrariness is associated with the licensing of the index and the reference of *pro* as a weak pronoun. However, such an analysis cannot explain why the impersonal reading is constrained by the thematic requirements of the verb, whereas the generic is not. We will suggest that this asymmetry is due to the syntactic mapping of the logical representations of each reading.

3.3 Diesing's (1992) Mapping Hypothesis

Diesing (1992) deals with the problem of deriving logical representations from syntactic representations and she suggests that the syntactic representation is mapped on the logical representation of the sentence. Based on Kamp's (1981) and Heim's (1982) assumptions about the logical representation of indefinites, she suggests that logical formulas may consist of two domains. For instance the example (13)

(13) Firemen are available

is ambiguous between an existential and a generic interpretation:

- (14) a. $\exists_x x \text{ is a fireman} \wedge x \text{ is available}$
 b. $\text{Gen}_x [x \text{ is a fireman}] x \text{ is available}$

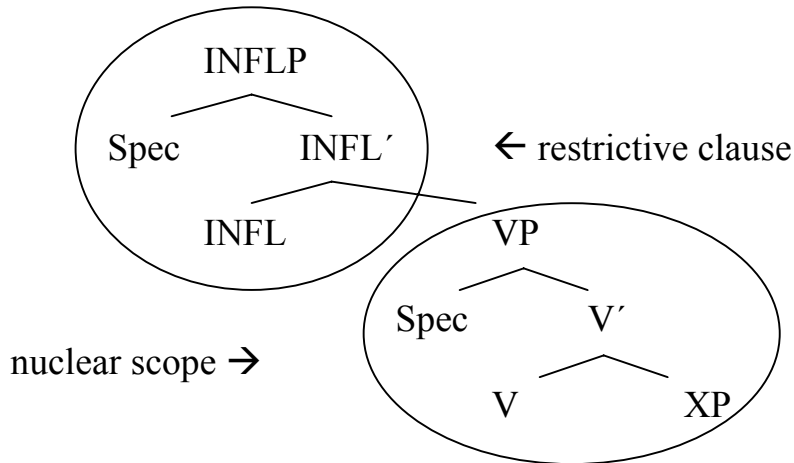
Let us consider the two logical formulas. The main domain, on which the quantifier scopes, is called the nuclear scope. This is the only domain available in simple existential readings such as (14a) and includes all the variables bound by the quantifier. Generic interpretations involve a quasi-universal quantification similar to that of the quantifier *every*. Such quantifiers quantify over a restricted set of elements. This set is defined in the logical representations by means of a restrictive clause, such as the one in the brackets in formula (14b).

Diesing (1992) suggests that syntactic representations are mapped on logical representations by means of the following principle:

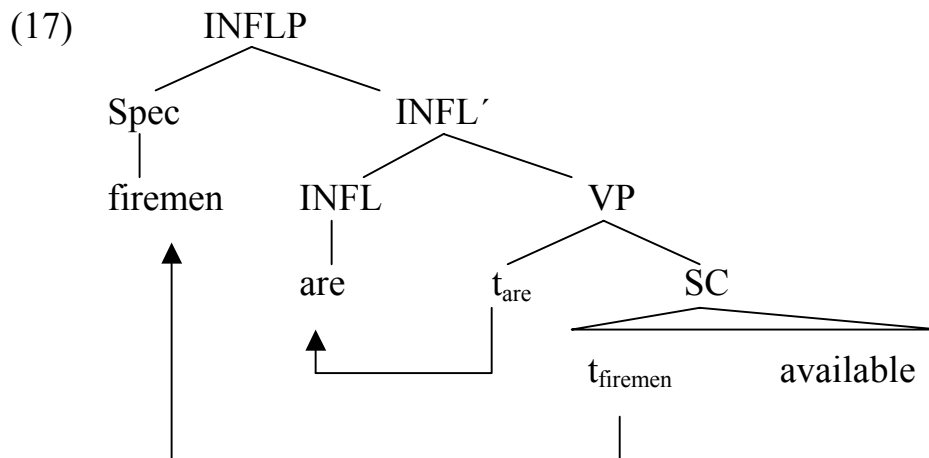
- (15) *Mapping Hypothesis* (Diesing 1992:10)
 Material from VP is mapped into the nuclear scope
 Material from INFLP is mapped into the restrictive clause

More specifically, she suggests that the tree representation splits at the level of LF in two parts, which correspond to the two parts of the logical representation.

(16) *Mapping hypothesis – Tree splitting*



Let us now return to the derivation of example (13).



The DP [*firemen*] is generated in the small clause headed by the A [*available*] and then is attracted by the strong functional feature of INFL to satisfy the EPP and to acquire nominative case, ending up in the [Spec, INFLP] position. Whatever its quantificational properties are at LF, the DP [*firemen*] belongs now to the INFL layer and therefore forms a restrictive clause, which derives the generic reading in (14b). The existential reading is derived by means of quantifier lowering of the DP [*firemen*] to its original position in the VP. Thus, no restrictive clause is formed and the only part is the nuclear scope, which defines the existential closure.

Leaving aside the details of Diesing's proposal, we will focus on its main point, i.e. the partition of the syntactic representation and its mapping on the logical representation of the sentence, in order to explain why null-subjects realizing internal arguments cannot tolerate the impersonal reading.

4. Derivation by phase and the syntactic asymmetry of the two readings

The splitting determined by the Mapping hypothesis applies to syntactic representations. From a derivational point of view, a similar splitting is proposed by Chomsky (2000, 2001) in his *Derivation by Phase* framework. According to this framework, the syntactic derivation proceeds in phases. The main phases are: a) the vP and b) the CP. A phase can be either strong or weak, depending on whether its main functional category is phi-complete. A strong phase, once completed, immediately proceeds to the C-I interface for interpretation. A weak phase, on the other hand, waits until the next (strong) phase in order to proceed to C-I and receive its interpretation. For instance, a vP that assigns an external theta-role (transitive predicate) is phi-complete and qualifies as a strong phase. On the other hand, a vP that does not assign an external theta-role, either because it has been suspended or because of the nature of the predicate, is a weak phase and it proceeds to the C-I interface together with the next strong phase, i.e. the CP.

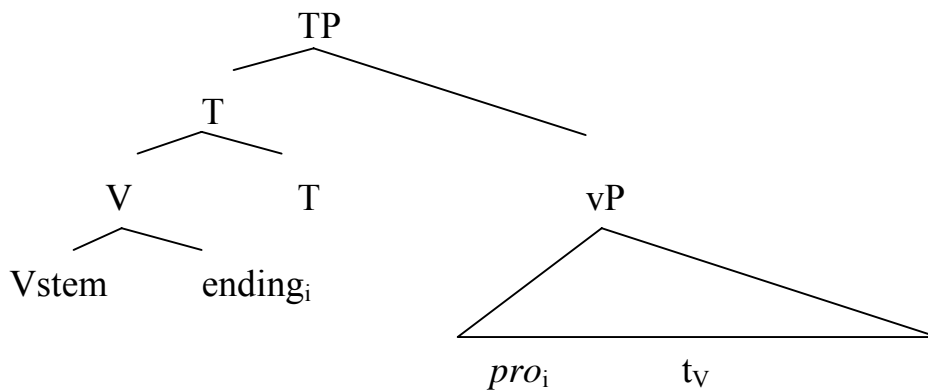
We can therefore propose that Diesing's *Mapping Hypothesis* can be reformulated in terms of phases as follows:

- (18) *Mapping Hypothesis* (reformulated)
 Material from the vP phase is mapped into the nuclear scope
 Material from the CP phase is mapped into the restrictive clause

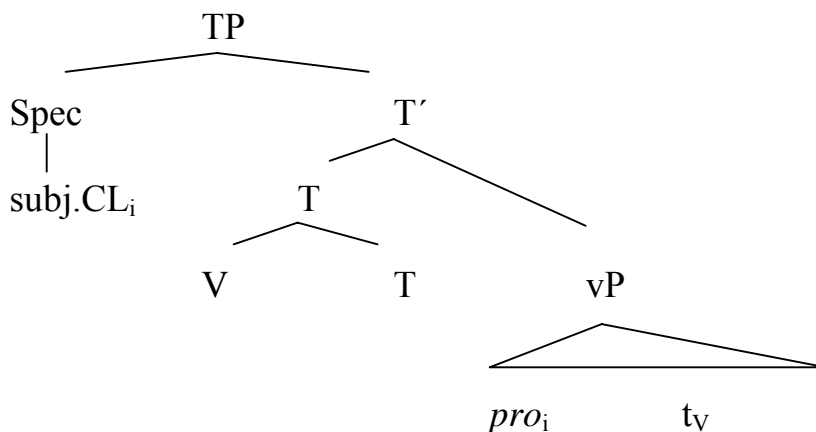
Let us now examine the asymmetry between the two possible readings of an arbitrary null-subject. The descriptive fact is that null-subjects realizing internal arguments cannot tolerate the impersonal reading. This means that they cannot acquire the existential quantification implicit in this reading. Since null-subjects are not inherently quantified, it can be argued that their quantificational status results from the structure in which they are embedded. Thus, it is the structure involved in a null-subject construction that is responsible for this asymmetry.

In Greek, the predominant analysis of null-subject constructions is the clitic-doubling analysis (Alexiadou & Anagnostopoulou 1998, Spyropoulos & Philippaki-Warburton 2001).⁴ According to this analysis, null-subject structures involve a *pro* merged with the relevant theta-position inside the vP, where it remains. This *pro* is doubled by either the verbal ending, which has a categorial D feature and functions as a clitic (see (19); Alexiadou & Anagnostopoulou 1998), or a null-subject clitic at the [Spec, TP] position (see (20); Spyropoulos & Philippaki-Warburton 2001).

(19) Alexiadou & Anagnostopoulou's (1998) analysis



(20) Spyropoulos & Philippaki-Warburton's (2001) analysis

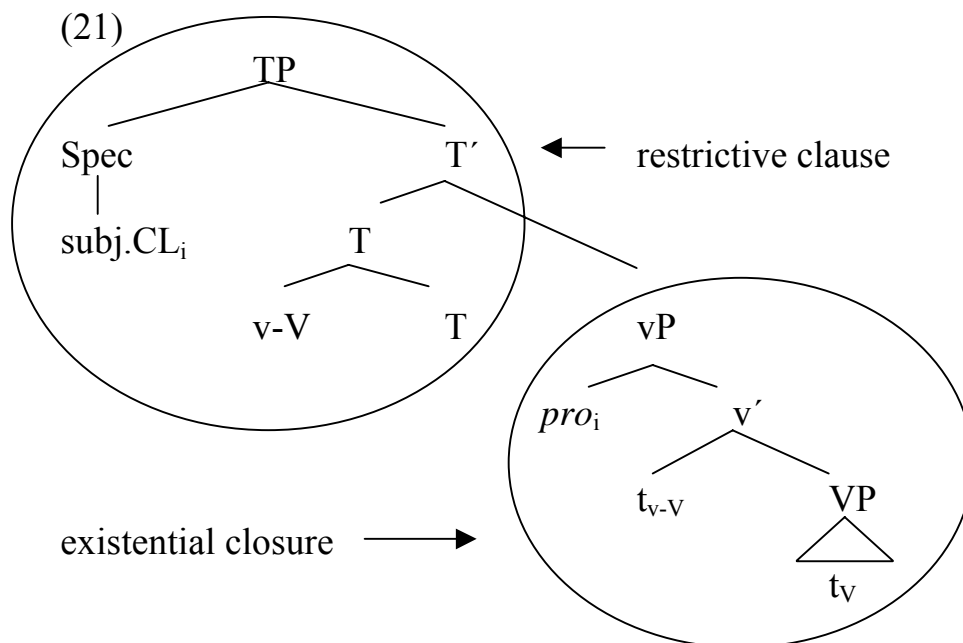


⁴ Alternative analyses assume a movement of *pro* to the EPP [Spec, TP] position (Cardinaletti 1997, Cardinaletti & Starke 1999). We will not compare the two kinds of analyses. We just point out that in both kinds of analyses the null-subject is always associated with the INFL / T projection.

Given such an analysis of null-subject constructions, an arbitrary null-subject is always associated with INFL, and it is expected to be available for the generic reading according to the Mapping Hypothesis. However, such an analysis predicts that *pro* remains at its theta-position inside the vP.⁵ If the material of the vP is mapped on the nuclear scope, then the impersonal reading would be equally available for all the null-subjects, regardless of their thematic status.

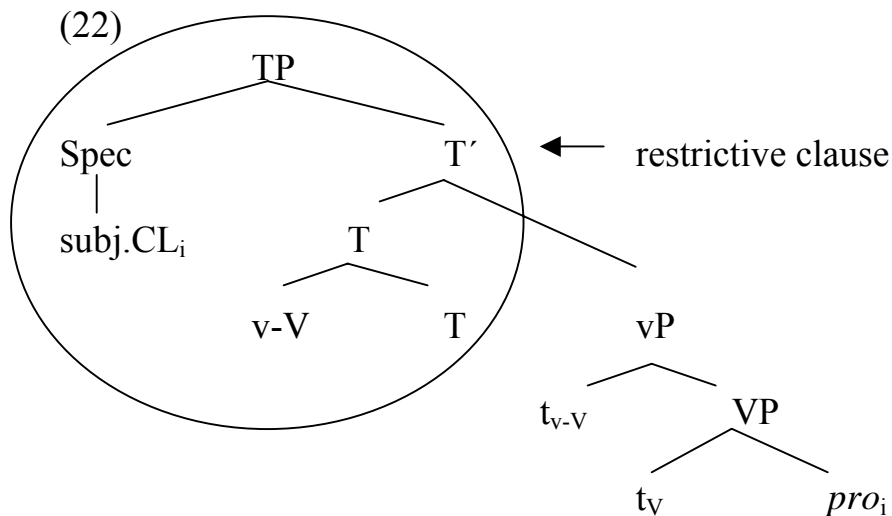
The unavailability of the impersonal reading for the null-subjects that realize an internal argument indicates that not all vPs are mapped on the nuclear scope. This means that some vPs do not facilitate the existential closure required by the null-subject in order to acquire the existential quantification. We therefore propose that the existential closure depends on the qualification of the vP as a strong phase. A strong vP proceeds to the C-I interface immediately after its completion and receives its interpretation. This procedure facilitates the existential closure and enables an arbitrary null-subject involved in such a structure to acquire the impersonal reading.

To be more specific, a transitive vP assigns an external theta-role, is phi-complete and thus qualifies as a strong phase. As such it facilitates the existential closure. An arbitrary null-subject that realizes this external argument is therefore embedded in a construction with a strong vP phase and thus it can acquire both readings, depending on its interpretation.



⁵ Evidence for this is derived from reconstruction and binding effects. See Spyropoulos (1999) and Spyropoulos & Philippaki-Warbuton (2001) for details.

On the other hand, ergative, passive and middle constructions involve a vP that does not assign an external argument. Such a vP is phi-incomplete and therefore is a weak vP phase. Since weak phases receive their interpretation at the level of the next phase, we propose that although this vP maps on the nuclear scope, it cannot facilitate the existential closure, because it cannot proceed to the C-I interface alone immediately after its completion. Thus, an arbitrary null-subject involved in such a construction cannot acquire the existential quantification and thus the only available reading is the generic one.



To sum up, we propose that the availability of the impersonal reading is associated with the qualification of the vP as a strong phase, whereas the generic reading is always structurally available since null-subjects are associated with the INFL layer.

5. Conclusions

Null-subject languages exhibit certain null-subject constructions with arbitrary reference. Since arbitrariness is a general property of weak pronominal elements (Jaeggli 1986, Cardinaletti & Starke 1999), the licensing of arbitrary null-subjects depends on the licensing of the quantification relevant to their interpretation. Thus, a null-subject that has acquired the relevant feature specification may be interpreted as arbitrary if it has not acquired a definite reference and the structure provides it with the appropriate quantification. The syntactic properties of the two possible readings of an arbitrary null-subject (impersonal vs. generic) are argued to

derive from the partition of the syntactic structure in two parts and its mapping on the logical formula. In this paper we reformulated the mapping hypothesis with its tree splitting in derivational terms by incorporating it in the syntactic framework of the *Derivation by phase*. If derivation proceeds in phases, as Chomsky (2000, 2001) suggests, then the operation of tree splitting imposed by the Mapping Hypothesis is redundant and the mapping on the logical formula may be seen as the result of the procedure that leads a phase to the C-I interface in order to acquire its interpretation. The fact that arbitrary null-subjects that realize internal arguments cannot acquire the impersonal reading is therefore attributed to the nature of the relevant vP as a weak phase.

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